

WHAT IS CLAIMED IS:

1. A homogeneous, thermoreversible gel comprising carrageenan wherein said carrageenan has a viscosity of less than 10 cP at 75 °C when measured in a 0.10 molar aqueous sodium chloride solution containing 1.5% by weight of said carrageenan based on the weight of all components in said solution, and optionally at least one of a plasticizer, a second film former, a bulking agent, and a pH controlling agent, wherein said gel has a solids content of at least 40% and said carrageenan is present in an amount of at least 70% of all carrageenan present in said gel.
2. The gel of claim 1, wherein said carrageenan is at least one of iota carrageenan, kappa carrageenan or kappa-2 carrageenan.
3. The gel of claim 2, wherein said carrageenan is at least 80% by weight iota carrageenan based on the total weight of all carrageenan in the gel and the gel has a gelling temperature of 60 °C or less.
4. The gel of claim 2, wherein said carrageenan is at least 80% by weight kappa carrageenan based on the total weight of all carrageenan in the gel and the gel has a gelling temperature of 30 °C or less.

5. The gel of claim 2, wherein said carrageenan is at least 80% by weight kappa-2 carrageenan based on the total weight of all carrageenan in the gel and the gel has a gelling temperature of 35 °C or less.
6. The gel of claim 1, wherein said viscosity is from 5 to 8 cP.
7. The gel of claim 1, wherein said carrageenan is the only carrageenan in the gel.
8. The gel of claim 1, wherein said gel contains a plasticizer.
9. The gel of claim 1, wherein said carrageenan contains at least one of calcium, potassium, magnesium, ammonium or sodium cation.
10. The gel of claim 9, wherein said cation is at least 75% by weight sodium based on the total cation content.
11. The gel of claim 9, wherein said cation is at least 85% by weight sodium based on the total cation content.
12. The gel of claim 9, wherein said cation is at least 90% by weight sodium based on the total cation content.

13. The gel of claim 9, wherein said cation is at least 95% by weight sodium based on the total cation content.
14. The gel of claim 9, wherein said cation is at least 98% by weight sodium or potassium or combination thereof based on the total cation content.
15. The gel of claim 1, wherein said carrageenan is present in an amount of from 0.5% to 25% by weight of the gel.
16. The gel of claim 1, wherein said carrageenan is present in an amount of from 0.5% to 15% by weight of the gel.
17. The gel of claim 1, wherein said solids content is at least 50%.
18. The gel of claim 1, wherein said solids content is at least 60%.
19. The gel of claim 1, wherein said solids content is at least 70%.
20. The gel of claim 1, wherein said solids content is at least 80%.
21. The gel of claim 1, wherein said solids content is at least 90%.

22. The gel of claim 1, wherein said carrageenan is present in an amount of at least 40% of the total dry weight of film formers in the gel.

23. The film of claim 1, wherein said carrageenan is present in an amount of at least 80% of the total dry weight of film formers in the gel.

24. The film of claim 1, wherein said carrageenan is the only film former present in the gel film.

25. The film of claim 1, wherein said second film former is selected from the group consisting of starch, starch derivative, starch hydrozylate, cellulose gums, alginates, propylene glycol alginate, polymannan gums, dextran, pectin, gellan, pullulan, alkylcellulose ethers, modified alkyl cellulose ethers and at least one carrageenan having a viscosity of 10 cP or more at 75 °C when measured in a 0.10 molar aqueous sodium chloride solution containing 1.5% by weight of said carrageenan based on the weight of all components in said solution.

26. The film of claim 1, wherein said plasticizer is at least one member selected from the group consisting of glycerin, sorbitol, polydextrose, maltitol, lactitol, and polyalkylene glycols; said second film former is at least one member selected from the group consisting of a starch, starch derivative, starch hydrozylate, cellulose gum, hydrocolloid, an alkylcellulose ether and a modified alkyl cellulose ether; and said bulking agent is at least one member selected from the group consisting of

microcrystalline cellulose, microcrystalline starch, starch, starch derivatives, inulin, starch hydrozylates and polydextrose.

27. The gel in any of claims 1-26, wherein said gel is a gel film.
28. An edible product comprising the gel in any of claims 1-26.
29. Soft capsules comprising a fill material encapsulated by a gel in any of claims 1-26, wherein said gel is a gel film.
30. The soft capsules of claim 29, wherein said encapsulated substance is at least one member selected from the group consisting of pharmaceuticals, vitamins, nutritional supplements, paint, paintballs, pigments, agriculturals, cosmetics, antioxidants, flavorant and food.
31. A solid form comprising a fill material encapsulated by a gel in any of claims 1-26.
32. The solid form of claim 31, wherein said fill material is a powder, tablet, caplet, microcapsule or capsule.
33. Hard capsules comprising a fill material encapsulated by a gel in any of claims 1-26, wherein said gel is a gel film.

34. The hard capsules of claim 33, wherein said encapsulated substance is at least one member selected from the group consisting of pharmaceuticals, vitamins, nutritional supplements, paint, paintballs, pigments, agriculturals, cosmetics, antioxidants, flavorant and food.

35. A process for making the gels in any of claim 1-26, comprising the step of:

(i) heating, hydrating, mixing, solubilizing and, optionally, de-aerating a composition of said carrageenan and optionally at least one of said plasticizer, said second film former, said bulking agent and said pH controlling agent in an apparatus providing sufficient shear, temperature and residence time to form a homogeneous, thermoreversible, molten composition thereof, wherein said temperature is at or above the solubilizing temperature of the molten composition; and

(ii) cooling said molten composition at or below its gelling temperature to form the gel.

36. The process of claim 35, wherein said molten composition is fed directly into at least one of a mixer, pump or devolatilizer prior to cooling.

37. The process of claim 35, wherein said apparatus is a Ross mixer, Stephan processor, extruder, jet cooker or fluid mixing apparatus.

38. A process for making the soft capsules of claim 29 comprising the steps of:

(i) heating, hydrating, mixing, solubilizing and, optionally, de-aerating a composition of said carrageenan and optionally at least one of said plasticizer, said secondary film former, said bulking agent and said pH controlling agent in an apparatus providing sufficient shear, temperature and residence time to form a homogeneous, molten composition thereof, wherein said temperature is at or above the solubilizing temperature of the molten composition; and

(ii) making soft capsules directly from said molten composition or allowing said molten composition to cool to its gelling temperature or below and thereafter making soft capsules therefrom.

39. The process of claim 38, wherein said apparatus is a Ross mixer, Stephan processor, extruder, jet cooker or fluid mixing apparatus.

40. The process of claim 38, wherein said molten composition is fed directly into at least one of a mixer, pump or devolatilizer prior to making soft capsules.

41. The process of claim 38, wherein said molten composition has a solids content of at least 50% prior to making soft capsules.

42. The process of claim 38, wherein said gel film has a solids content of at least 60% prior to making soft capsules.

43. A process for lowering the gelling temperature of a composition having at least 40% solids and containing carrageenan and optionally at least one of a plasticizer, a second film former, a bulking agent, and a pH controlling agent, comprising the step of using at least one reduced molecular weight carrageenan having a viscosity of less than 10 cP at 75 °C when measured in a 0.10 molar aqueous sodium chloride solution containing 1.5% by weight of said reduced molecular weight carrageenan based on the weight of all components in said solution.

44. A delivery system comprising a homogenous, thermoreversible gel film, wherein said gel film comprises: (i) a film forming amount of a carrageenan and optionally at least one of a plasticizer, a second film former, a bulking agent, and a pH controlling agent; and (ii) an active substance; wherein carrageenan comprises at least one reduced molecular weight carrageenan having a viscosity of less than 10 cP at 75 °C when measured in a 0.10 molar aqueous sodium chloride solution containing 1.5% by weight of said reduced molecular weight carrageenan based on the weight of all components in said solution.

45. The delivery system of claim 44, wherein said active substance is at least one member selected from the group consisting of an oral care agent, a breath freshening agent, an antimicrobial agent, a cooling agent, a pharmaceutical agent, a nutraceutical agent, a salivary stimulant agent, a vitamin, a mineral, a coloring agent, cosmetic ingredient, agricultural active, a sweetener, a flavorant, a fragrance and a food.